

56. (New) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
curing the ceramic precursor in the mold at a temperature of at least 100°C.
57. (New) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
curing the ceramic precursor in the mold under a moisture-free atmosphere.
58. (New) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
dissolving the mold in a solution containing fluoride anions.
59. (New) A method comprising:
providing an elastomeric mold comprising polydialkylsiloxane material having at least one component with at least one dimension less than 100 μm ; and
filling the mold with a ceramic precursor.

REMARKS

Claim 1 has been amended to include the limitations of claim 8, which was objected to, and claim 5, from which claim 8 depended. Accordingly, claims 5 and 8 have been cancelled. Claims 6 and 7, which depended on claim 5, have been rewritten to depend from claim 1. Thus, no new matter has been added.

Applicants have replaced the phrase “atom type” with “element” in claims 2, 3, 4, and 6. These amendments have been made for reasons of clarity.

Claims 10, 12, 15, 17, 22, 24, 28, and 36 have been rewritten in independent form as claims 52, 53, 54, 55, 56, 57, 58, and 59, respectively. Minor changes in language have been made in some cases to more smoothly integrate the limitations of the claims. No new matter has been added.

Claim 15 has been amended to rectify an inadvertent typographical error. The period at the end of claim 15 was missing.

Claim 51 has been cancelled without prejudice. Claims 39-49, which were withdrawn from consideration, have been cancelled without prejudice. Applicants reserve the right to file the subject matter of claims 39-49 and 51 in a continuation application.

Claims 1-4, 6, 7, 9-38, 50, and 52-59 are now pending in the application.

Rejection of claim 6 under 35 U.S.C. §112, ¶2

Claim 6 was rejected under 35 U.S.C. §112, ¶2, as being indefinite. The Patent Office states that the phrase “atom type” is indefinite.

Although Applicants do not agree with the Patent Office’s assertion that “atom type” is indefinite, Applicants have amended the phrase “atom type(s)” with “element(s)” in the claims, solely for reasons of clarity. Withdrawal of the rejection of claim 6 is therefore respectfully requested.

Rejections under 35 U.S.C. §102(b)

Various claims were rejected under 35 U.S.C. §102(b) as being anticipated by Hirata, U.S. Patent No. 5,676,906; Ghosh, *et al.*, U.S. Patent No. 5,735,985; Bruck, *et al.*, U.S. Patent No. 5,698,485, Freimuth, *et al. J. Am. Ceram. Soc.*, 79: 1157-1165 (1996); and Lochhead, *et al.*, U.S. Patent No. 6,039,897. However, the basis of these rejections is not clear, as the Patent Office has provided no explanation for any of these rejections.

Applicants have rewritten claims 8, 12, 15, 24, and 36, which were objected to, but allowable if rewritten in independent form, as claims 1, 53, 54, 57, and 59, respectively. Claims

5 and 8 have been correspondingly cancelled, as discussed above. Applicants do not concede to the merits of these rejections (and, as noted, no explanation for the rejections was given); however, Applicants have amended these claims solely for the purpose of expediting the patent application process.

Applicants have also rewritten claims 10, 17, 22, and 28 in independent form as claims 52, 55, 56, and 58, respectively. Claims 10, 17, and 22 were rejected in view of Lochhead. However, it is believed that Lochhead does not disclose a viscosity of less than about 50 cm²/s, nor does Lochhead disclose allowing a ceramic precursor to enter a volume of lower pressure, as recited in claims 52 and 55, respectively (based on claims 10 and 17, rewritten in independent form). Additionally, Lochhead does not disclose curing a ceramic precursor in a mold at a temperature of at least 100°C. Instead, Lochhead discloses temperatures less than 100°C (see e.g., column 6, lines 56-58). Thus, claim 56 (based on claim 22, rewritten in independent form) is also believed to be patentable. Claim 28 was rejected in view of Hirata, but Hirata does not disclose using a solution containing fluoride anions to dissolve a mold. Thus, claim 58 (which is based on claim 28, rewritten in independent form), is also believed to be patentable.

It is thus respectfully requested that the rejection of these claims under 35 U.S.C. §102(b) be withdrawn.

Rejections under 35 U.S.C. §103(a)

Various claims were rejected under 35 U.S.C. §103(a) as being unpatentable over Lochhead (U.S. Patent No. 6,039,897); Hirata (U.S. Patent No. 5,676,906); and Bruck, *et al.* (U.S. Patent No. 5,698,485) in view of Blum, *et al.* (U.S. Patent No. 5,919,572).

Without conceding to the merits of the above-mentioned rejections, it is believed that the pending claims, as amended, are patentable in view of the above comments, and it is respectfully requested that the rejection of these claims be withdrawn. Additionally, Applicants note that the Patent Office asserts that “it would have been obvious to one skilled in the art at the time of the invention to...” in formulating its rejections, but does not describe where, in any of the above references, there is a teaching or a suggestion for a modification or a combination of the references that would be necessary to formulate a *prima facie* case for obviousness.

Objections

Claims 8, 12, 15, 16, 24, 36, and 50 were objected to as being dependent upon a rejected base claim. The Patent Office has indicated that these claims would be allowable if rewritten in independent form.

Claims 8, 12, 15, 24, and 36 have been rewritten in independent form as claims 1, 53, 54, 57, and 59, respectively.

As claim 50 is an independent claim, it is not clear to the Applicants why claim 50 has been objected to. It is believed that claim 50 is allowable, and it is respectfully requested that the objection of this claim be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
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MARKED-UP CLAIMS

Claims 1, 2, 3, 4, 6, 7, 15, and 51 have been amended as follows:

1. A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ; [and]
filling the mold with a ceramic precursor; and
heating the ceramic precursor under a moisture-free atmosphere to produce a ceramic structure.
2. The method of claim 1, wherein the ceramic precursor comprises at least two different [atom types] elements.
3. The method of claim 2, wherein the at least two different [atom types] elements are selected from a group consisting of carbon, nitrogen, boron, silicon, phosphorus, aluminum and hydrogen.
4. The method of claim 1, wherein the ceramic precursor comprises at least three different [atom types] elements.
6. The method of claim [5] 1, wherein each [atom type] element of the ceramic structure is derived from the ceramic precursor.
7. The method of claim [5] 1, wherein the step of heating is performed under an inert atmosphere.
15. The method of claim 13, further comprising treating the substrate surface to render the substrate inert with respect to reaction with the ceramic precursor and any subsequent products resulting from the ceramic precursor.